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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/554,101	10/21/2005	Tsutomu Shibata	Q90231	6582
65565 7590 01/23/2009 SUGHRUE-265550 2100 PENNSYLVANIA AVE. NW WASHINGTON, DC 20037-3213				
EXAMINER DIAZ, JOSE				
ART UNIT 2879		PAPER NUMBER		
MAIL DATE 01/23/2009		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/554,101

**Applicant(s)**

SHIBATA, TSUTOMU

**Examiner**

JOSE M. DIAZ

**Art Unit**

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 November 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 and 6-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 7-11 is/are rejected.
- 7) ☐ Claim(s) 4 and 6 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S5108)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Amendment*

The Amendment, filed on November 3, 2008, has been entered and acknowledged by the Examiner.

Cancellation of claim 5 has been entered.

Claims 1-4 and 6-11 are pending in the instant application.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by **Yoshida et al (4006106)**, hereinafter **Yoshida**.

Regarding **claim 1**, Yoshida clearly shows and discloses a spark plug comprising: an insulator (ceramic insulator) having a through-hole (axial hole) formed in an axial direction; a terminal attachment (terminal screw) disposed on one end side of said insulator; a *center electrode* disposed on other end side of said insulator; and an electrically conductive connection layer (glassy resistor composition) disposed in said through-hole for electrically connecting said terminal attachment and said center electrode to each other, said electrically conductive connection layer including at least one electrically conductive sealing layer connected to at least one of said terminal

attachment and said center electrode, wherein said electrically conductive sealing layer is made of electrically conductive glass containing a glass component, and a metal component which comprises Cu-Zn alloy in an amount larger than 10 mass% (col. 2 , lines 12-17, 23-27, 45-58).

Regarding **claim 2**, Yoshida clearly shows and discloses that substantially all Zn contained in said metal component is alloyed (col. 2, line 25).

Regarding **claim 3**, Yoshida clearly shows and discloses a method for producing a spark plug including an insulator (ceramic insulator) having a through-hole (axial hole) formed in an axial direction, a terminal attachment (terminal screw) disposed on one end side of said insulator, a center electrode disposed on other end side of said insulator, and an electrically conductive connection layer (glassy resistor composition) disposed in said through-hole for electrically connecting said terminal attachment and said center electrode to each other, said electrically conductive connection layer including at least one electrically conductive sealing layer connected to at least one of said terminal attachment and said center electrode, said method comprising the steps of: filling said through-hole (axial hole) of said insulator (ceramic insulator) with electrically conductive glass powder containing glass powder (borosilicate glass) and metal powder containing at least Cu-Zn alloy powder in an amount larger than 10 mass%; and softening said electrically conductive glass powder to form said electrically conductive sealing layer (col. 2 , lines 12-17, 23-27, 45-58).

Regarding **claim 7**, Yoshida clearly shows and discloses that the metal powder does not contain any non-alloyed Zn powder (col. 2, line 25).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

a. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yoshida et al (4006106), hereinafter Yoshida.**

Regarding **claim 8**, Yoshida clearly shows and discloses the Cu-Zn alloy powder (col. 2, line 25).

However, Yoshida fails to exemplify that the Cu-Zn alloy powder contains 5 to 40 mass% of Zn.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide for the Cu-Zn alloy powder to contain 5 to 40 mass% of Zn, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. In re Aller, 105 USPQ 233.

Regarding **claim 9**, Yoshida clearly shows and discloses that the electrically conductive glass powder contains inorganic oxide of semiconductor as at least one member selected from In, Sn, Cr, V and Ti Table 1A, Sample No. 1).

Although, Table 1A, Sample No. 1 uses Fe it is considered within the capabilities of one skilled in the art to employ the Cu-Zn alloy instead of the Fe as an obvious matter of design engineering as indicated in col. 2, lines 12-25.

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ the Cu-Zn alloy as an obvious matter of design engineering.

Regarding **claim 10**, Yoshida clearly shows and discloses that the electrically conductive glass powder contains said semiconductor inorganic oxide smaller than 10 parts by mass when a total amount of said glass powder and said metal powder is 100 parts by mass (Table 1A, Sample No. 1). Same obviousness rationale from the rejection of claim 9 applies

Regarding **claim 11**, Yoshida discloses the claimed invention.

However, Yoshida fails to exemplify that a mean particle size of said metal powder is not smaller than 5  $\mu\text{m}$  and not larger than 40  $\mu\text{m}$ .

It is considered within the capabilities of one skilled in the art to provide a mean particle size of said metal powder is not smaller than 5  $\mu\text{m}$  and not larger than 40  $\mu\text{m}$  as an obvious matter of design engineering.

Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to determine a workable particle size, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art. In re Aller, 105 USPQ 233.

***Allowable Subject Matter***

Claims 4 and 6 objected to as being dependent upon a rejected base claim, but would be allowable if incorporated into the base claim.

Regarding claim 4, the references of Prior Art of record fails to teach or suggest the combination of the limitations as set fourth in claim 4, and specifically comprising the limitation; "wherein said electrically conductive glass powder contains said metal powder larger than 30 mass% and smaller than 75 mass%".

Regarding claim 6, the references of Prior Art of record fails to teach or suggest the combination of the limitations as set fourth in claim 6, and specifically comprising the limitation; "wherein said metal powder contains said Cu-Zn powder larger than 50 mass%

Yoshida, which is closest prior art of the record, discloses the claimed method for producing a spark plug of the invention of the instant application. However, Yoshida discloses on col. 4, lines 22-25 that the alloy must not exceed 30wt%, therefore Yoshida does not disclose the limitations of claims 4 or 6. This limitation has not been found, taught, or suggested by the prior art of the record which it makes these claims allowable over the prior art.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSE M. DIAZ whose telephone number is (571)272-

9822. The examiner can normally be reached on 7:00 - 5:00 EST Monday-Thursday;  
Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on 571-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/José M. Díaz/  
Examiner, Art Unit 2879

/Sikha Roy/  
Primary Examiner, Art Unit 2879